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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

invention of: Seela et al.

Serial No.: 10/070,340

Group Art Unit: To be assigned

Filed: February 27, 2002

Examiner: To be assigned

For: 2-AZAPURINE COMPOUNDS AND  
THEIR USE

Attorney Docket No.: 1803-336-999

INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

In accordance with the duty of disclosure provisions of 37 C.F.R. §1.56, there is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the application.

1. Enclosures accompanying this Information Disclosure Statement are:

1a. ☒ A list of all patents, publications, applications, or other information submitted for consideration by the office.

1b. A legible copy of :

- ☐ Each U.S. patent application publication and U.S. and foreign patent;
- ☒ Each publication or that portion which caused it to be listed on the PTO-1449;
- ☐ For each cited pending U.S. application, the application specification including the claims, and any drawing of the application, or portion of the application which caused it to be listed on the PTO-1449 including any claims directed to that portion;
- ☐ all other information or portion which caused it to be listed on the PTO-1449.

1c. ☒ An English language copy of search report(s) from a counterpart foreign application or PCT International Search Report.

- 1d. ☐ Explanations of relevancy (ATTACHMENT 1(d), hereto) or English language abstracts of the non-English language publications.
2. ☒ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(b):
- ☐ Within three months of the filing date of a national application other than a continued prosecution application under §1.53(d);
  - ☐ Within three months of the date of entry of the national stage as set forth in §1.491 in an international application;
  - ☒ Before the mailing of the first Office action on the merits;
  - ☐ Before the mailing of a first Office action after the filing of a request for continued examination under §1.114.
3. ☐ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(c) after the period specified in 37 C.F.R. §1.97(b), but before the mailing date of any of a final action under 37 C.F.R. §1.113, a notice of allowance under 37 C.F.R. §1.311 or an action that otherwise closes prosecution in the application.

*(Check either Item 3a or 3b)*

- 3a. ☐ The Certification Statement in Item 5 below is applicable. Accordingly, no fee is required.
- 3b. ☐ The \$180.00 fee set forth in 37 C.F.R. §1.17(p) in accordance with 37 C.F.R. §1.97(c) is:
- ☐ enclosed
  - ☐ to be charged to Pennie & Edmonds LLP Deposit Account No. 16-1150.

*(Item 3b to be checked if any reference known for more than 3 months)*

4. ☐ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(d) after the period specified in 37 C.F.R. §1.97(c), but on or before the date of payment of the issue fee.

The \$180.00 fee set forth in 37 C.F.R. §1.17(p) is:

- ☐ enclosed.
- ☐ to be charged to Pennie & Edmonds LLP Deposit Account No. 16-1150.

The Certification Statement in Item 5 below is applicable.

5. ☐ Certification Statement *(applicable if Item 3a or Item 4 is checked)*

*(Check either Item 5a or 5b)*

- 5a. ☐ In accordance with 37 C.F.R. §1.97(e)(1), it is certified that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

- 5b. ☐ In accordance with 37 C.F.R. §1.97(e)(2), it is certified that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned after making reasonable inquiry, was known by any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement.
6. ☐ This application is a continuation application under 37 C.F.R. §1.60 or §1.53(b) or (d).

*(Check appropriate Items 6a, 6b and/or 6c)*

- 6a. ☐ A Petition to Withdraw from issue under 37 C.F.R. §1.313(b)(5) is concurrently filed herewith.
- 6b. ☐ Copies of publications listed on Form PTO-1449 from prior application Serial No. \_\_, filed on \_\_, of which this application claims priority under 35 U.S.C. §120, are not being submitted pursuant to 37 C.F.R. §1.98(d).
- 6c. ☐ Copies of the publications listed on Form PTO-1449 were not previously cited in prior application Serial No. \_\_, filed on \_\_, and are provided herewith.
7. ☐ This is a Supplemental Information Disclosure Statement. *(Check either Item 7a or 7b)*
- 7a. ☐ This Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(f) supplements the Information Disclosure Statement filed on \_\_. A bona fide attempt was made to comply with 37 C.F.R. §1.98, but inadvertent omissions were made. These omissions have been corrected herein. Accordingly, additional time is requested so that this Supplemental Information Disclosure Statement can be considered as if properly filed on \_\_.
- 7b. ☐ This Supplemental Information Disclosure Statement is timely filed within one (1) month of a PTO Notice under 37 C.F.R. §1.97(i).
8. ☐ In accordance with 37 C.F.R. §1.98, a concise explanation of what is presently understood to be the relevance of each non-English language publication is:

*( Check Item 8a, 8b, or 8c)*

- 8a. ☐ satisfied because all non-English language publications were cited on the enclosed English language copy of the PCT International Search Report or the search report from a counterpart foreign application indicating the degree of relevance found by the foreign office.
- 8b. ☐ set forth in the application.
- 8c. ☐ enclosed as an attachment hereto.
9. ☒ The Commissioner is authorized to charge any additional fee required or credit any overpayment for this Information Disclosure Statement and/or Petition to Pennie & Edmonds LLP Deposit Account No. 16-1150.

10. ☒ No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than a search report of a foreign counterpart application or PCT International Search Report if submitted herewith). 37 C.F.R. §§1.97(g) and (h).

Respectfully submitted,

Date: May 22, 2002



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 <b>LIST OF REFERENCES CITED BY APPLICANT</b> (Use several sheets if necessary)					ATTY. DOCKET NO.		APPLICATION NO.	
					1803-336-999		To be assigned	
					APPLICANT			
					Seela et al.			
FILING DATE					GROUP			
2/27/02					To be assigned			
<b>U.S. PATENT DOCUMENTS</b>								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	AA	US 4458066(A1,X6)	7/03/84	Caruthers et al.				
	AB	US4683202	7/28/87	Mullis				
<b>FOREIGN PATENT DOCUMENTS</b>								
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES NO	
	AC	International Search Report PCT/EP 00/08371	2/26/01	PCT				
	AD	DE3943522	7/02/91	Germany				
	AE	EP0286028(B1)	3/31/88	EPO				
	AF	EP0324474(B1)	12/01/89	EPO				
	AG	EP0476014(B1)	7/06/90	EPO				
	AH	EP0624161(B1)	9/12/92	EPO				
	AI	EP0680969(A2,A3)	4/26/95	EPO				
	AJ	WO9202638(A1)	8/06/90	PCT				
	AK	WO9220702(A1)	5/22/92	PCT				
<b>OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)</b>								
	AL	Acedo et al., "Syntesis and Biophysical and Biological Properties of Ologonucleotides Containing 2-Aza-2'-Deoxyinosine," <i>J. Org. Chem.</i> <b>1995</b> , 60, pp 6262-6269.						
	AM	Beaucage et al., "Deoxynucleoside Phosphoramidites - A New Class Of Key Intermediates For Deoxypolynucleotide Synthesis," <i>Tetrahedron Letters</i> , <b>1981</b> , 22: 20, pp 1859-1862.						
	AN	Bennett, L.L. et al. "Nucleosides of 2-Aza-Purines - Cytotoxicities and Activities as Substrates for Enzymes Metabolizing Purine Nucleosides" <i>Biochemical Pharmacology</i> , <b>1976</b> , 25: 5, pp 517-521.						
	AO	Brown et al., "Chemical Synthesis and Cloning of a Tyrosine tRNA Gene," <i>Methods In Enzymology</i> , <b>1979</b> , 68, pp 109-151.						
	AP	Bussolari J.C. et al. "The Synthesis And Biological Evaluation of 4-p-Nitrobenzylthio-v-triazolo(4,5-d)pyrodazine and Imidazo(4,5-d)pyridazine Ribosides as Potential Nucleoside Transport Inhibitors" <i>Bioorganic &amp; Medicinal Chemistry</i> , Vol. 4, No. 10, 1996, pp 1725-1731.						
	AQ	Carbon, J.A. "Synthesis of Some Imidazo(4,5-d) pyridazines and Imidazo (4,5-d) triazolo (4,3-b) pyridazines" <i>Journal of Organic Chemistry</i> , Vol. 25, No. 4, 1960, pp 579-582.						
	AR	Eritja, R. et al. "Preparation of Oligonucleotides Containing Non-Natural Base Analogues" <i>Nucleosides and Nucleotides</i> , Vol. 14, No. 3-5, 1995, pp821-824.						

	AS	Fernandez-Forner, D. et al. "Preparation of Oligonucleotides Containing dAICA Using an Unexpected Side-Reaction Observed On A Projected Derivative of 2-Aza-2'-Deoxyinosine" <i>Tetrahedron</i> , Vol. 47, No. 42, 1991, pp 8917-8930.
	AT	Fukui et al., "XLIV Synthesis and Properties of Poly(2-AZAADENYLIC ACID) and Poly(2-Azainosinic Acid)*," <i>Biochimica et Biophysica Acta</i> , 1978, 520, pp 441-451.
	AU	Hoheisel, J., "Sequence-Independent and Linear Variation of Oligonucleotide DNA Binding Stabilities," <i>Nucleic Acids Research</i> , 1996, 24:3, pp 430-432.
	AV	Hoheisel, J., "Oligomer-Chip Technology," <i>TIBTECH</i> , 1997, 15, pp 465-469.
	AW	Kazimierczuk et al., "Stereoselective Synthesis of 2-Azapurine 2'-Deoxy- $\beta$ -D-Ribonucleosides By Nucleobase-Anion Glycosylation," <i>Liebigs Ann. Chem.</i> , 1990, pp 647-651.
	AX	Lin et al., "Synthesis and Properties of a Novel Phosphodiester Analogue, Nucleoside Boranophosphorothioate," <i>Chem. Commun.</i> , 1999, pp 1517-1518.
	AY	Montgomery, J.A. et al. "Nucleosides Of 2-Azapurines. 7H-Imidazo4,5-D-1,2,3-Triazines" <i>Journal of Medicinal Chemistry, American Chemical Society</i> , 18: 6, 1975, pp 564-567.
	AZ	Narang et al., "Improved Phosphotriester Method for the Synthesis of Gene Fragments," <i>Methods in Enzymology</i> , 1979, 68, pp 90-98.
	BA	Saunders, P.P. et al. "Mechanisms of 5-(3,3-Dimethyl-1-triazeno) imidazole-4-carboxamide (Dicarbazine) Cytotoxicity Toward Chinese Hamster Ovary Cells in Vitro are Dictated by Incubation Conditions." <i>Chemico-Biological Interactions</i> , 1986, 58: 3, pp 319-331.
	BB	Seela F. et al. "Synthesis, Base-Pairing and Stacking Properties of Oligonucleotides Containing 2-Aza-2' - deoxyadenosine." <i>Chemical Abstracts</i> , 2000, 133, Abstract No. 89731z
	BC	Sugiyama, T. et al. "2-Aza-2'-Deoxyadenosine : Synthesis, Base-Pairing Selectivity, and Stacking Properties of Oligonucleotides." <i>Chemistry A European Journal</i> , 2000, 6: 2, pp369-378.
	BD	Yamaji et al., "The Synthesis of 2-AZA-Adenosine-3' ,5'-Cyclic Phosphate via 1,N <sup>6</sup> -Etheno-Adenosine-3' ,5'-Cyclic Phosphate," <i>Chemistry Letters</i> , 1975, pp 311-314.
EXAMINER		DATE CONSIDERED
<p>*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</p>		